What Is Claimed Is:

1   1.   A method of signal path tracking for symbol timing
2   recovery in a receiver, comprising the steps of:
3   providing current sampling points for a received signal to
4   generate current symbols according to a timing
5   scheme;
6   detecting optimal points of the current symbols for
7   sampling the received signal;
8   computing an expected error from the current sampling
9   points and the optimal points; and
10   adjusting the timing scheme to generate a future sampling
11   point for a subsequent symbol according to the
12   expected error, thereby recovering symbol timing of
13   the receiver.

1   2.   The method according to claim 1, wherein computing the
2   expected error further comprises:
3   comparing the current sampling points with the optimal
4   points to obtain timing differences;
5   filtering the timing differences to obtain an average
6   moving error; and
7   integrating the average moving error to obtain the expected
8   error.

1   3.   The method according to claim 2, wherein filtering the
2   timing   differences   further   comprises   convolution   and
3   accumulation of the timing differences.

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1   4.   The method according to claim 1, wherein the optimal

2 points for sampling the received signal correspond with

3 samplings of a maximum signal strength in each symbol duration.

1   5.   The method according to claim 1, wherein computation

2 of the expected error occurs once every N symbols, and the

3 current sampling points and the optimal points for computing the

4 expected error are averages of the N current symbols.

1   6.   The method according to claim 1, wherein the timing

2 scheme for sampling the received signal is adjusted to continue

3 alignment of a sampling clock transition with an optimal

4 sampling point computed by the expected error of a preceding

5 symbol.

1   7.   A system of signal path tracking for symbol timing

2 recovery in a receiver comprising:

3   a symbol sampler, sampling a received signal at current

4   sampling point according to a timing scheme;

5   a peak detector, detecting optimal points for sampling the

6   received signal;

7   an error detector, computing an expected error from the

8   optimal points detected by the peak detector and the

9   current sampling points of the symbol sampler; and

10   a path tracker, computing a future sampling point of a

11   subsequent symbol and providing the future sampling

12   point to the symbol sampler to adjust the timing

13   scheme.

1   8.   The system for symbol timing recovery according to

2 claim 7, the error detector further comprising:

3   a comparator, comparing the current sampling points of the

4   symbol sampler and the optimal points detected by the

5   peak detector to obtain timing differences;

6   a loop filter, filtering the timing differences received

7.   from the comparator to obtain an average moving

8   error; and

9   an integrator, integrating the average moving error from

10   the loop filter to obtain an expected error.

1   9.   The system for symbol timing recovery according to

2   claim 7, wherein the optimal points for sampling the received

3   signal correspond with samplings of a maximum signal strength

4   in each symbol duration.

1   10.   The system for symbol timing recovery according to

2   claim 7, wherein the error detector computes the expected error

3   once every N symbols, and the current sampling points and the

4   optimal points for computing the expected error are averages of

5   N symbols.